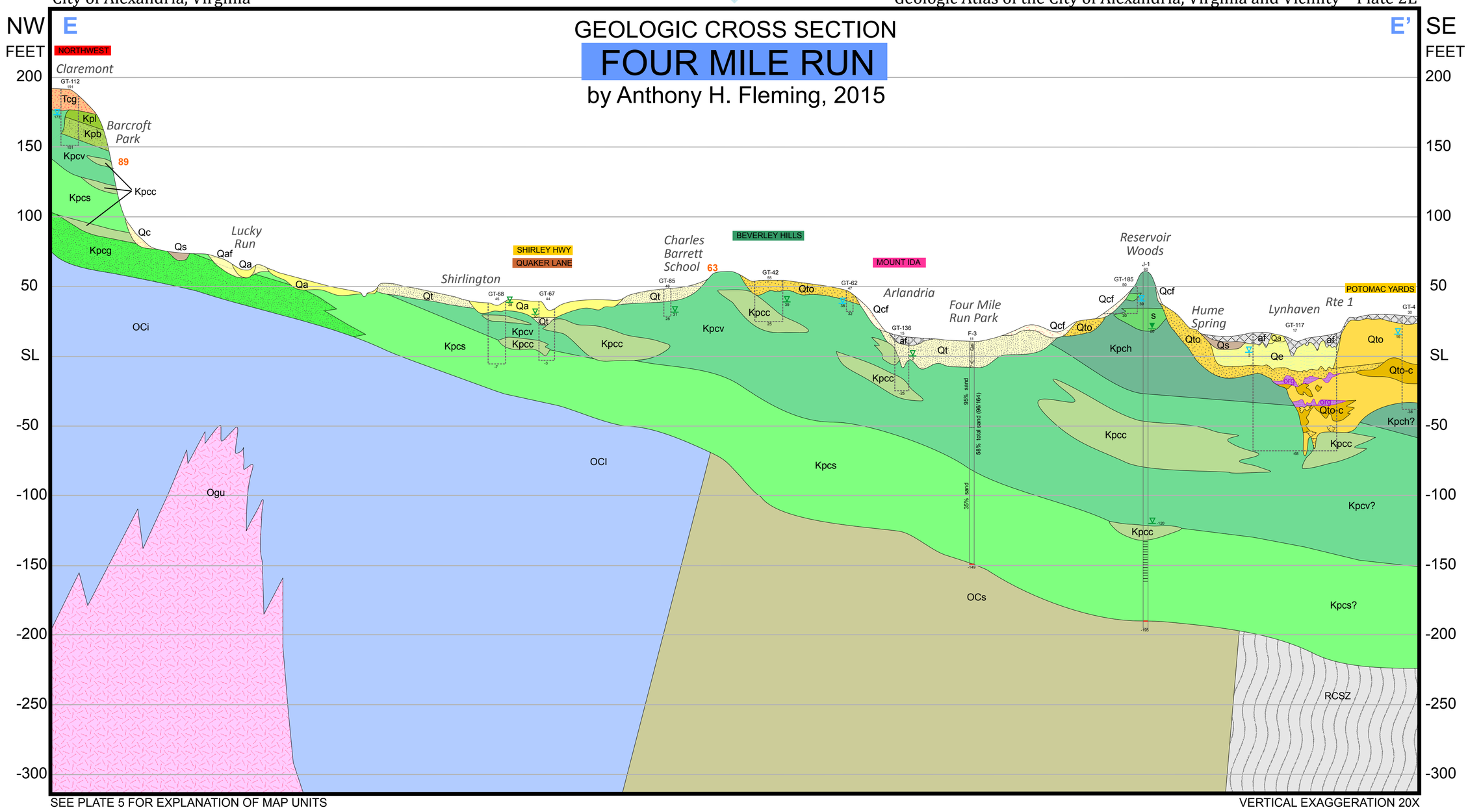
GEOLOGIC CROSS SECTION

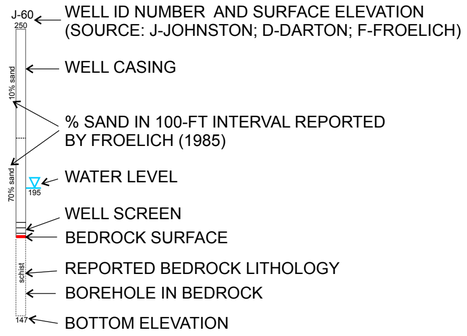
FOUR MILE RUN

by Anthony H. Fleming, 2015

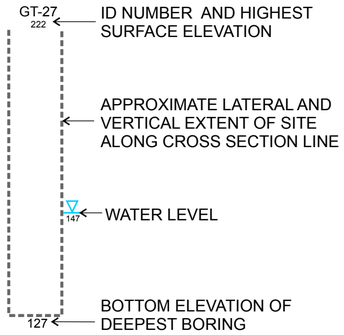


EXPLANATION OF CROSS SECTION SYMBOLS:

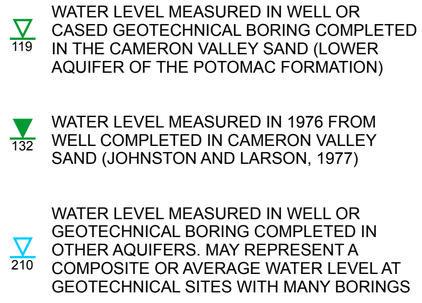
WATER WELL



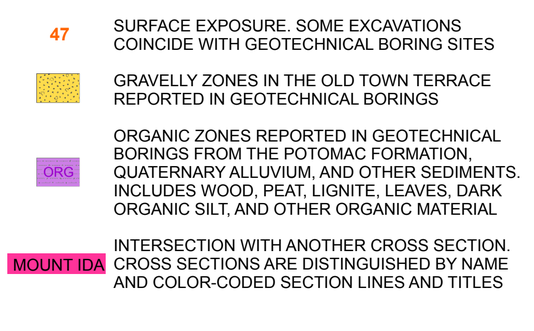
GEOTECHNICAL BORING SITES



WATER LEVELS REPORTED IN WELLS AND GEOTECHNICAL BORINGS



OTHER SYMBOLS



GEOLOGIC CROSS SECTION 2E– FOUR MILE RUN

Cross section 2E follows Four Mile Run Valley downstream from Barcroft Park, in southern Arlington County, to the extreme northern end of Potomac Yards, near George Washington Memorial Parkway and the Potomac River. The section begins at the lowest bedrock outcrop on Four Mile Run, and traces the regular eastward slope of the bedrock surface and the corresponding thickening of the Potomac Formation and younger alluvial sediments. The view is northward along the section line, which locally bends to take in the locations of nearby geotechnical boring sites, historical water wells, and other places of interest (e.g., Reservoir Woods, Hume Spring). These features, and other sites of cultural, historical, and environmental interest. are indicated by labels and symbols along the cross section. The specific location of the cross section is indicated on Plate 1 by a blue section line.

The cross sections are intended to be used together with the geologic maps, particularly Plate 5, to illustrate the third dimension of the map units. Contacts between map units are approximately located and, in the Potomac Formation, are typically gradational or transitional. The abundance of control points (surface exposures, wells, geotechnical sites) along the cross section provides a general indication of the reliability of contact locations. Map units are depicted using the same colors, patterns, and labels as on Plate 5, and the explanation of map units on Plate 5 serves as the legend. The section also depicts some bedrock units and several gravelly zones and organic horizons in the Old Town terrace that are present only in the subsurface and thus do not appear on Plate 5.

The dominant physiographic feature is the deeply entrenched valley of Four Mile Run, which is flanked by many large terraces. Some of these terraces are graded to the massive Old Town terrace, which occupies the eastern part of the section.

The Four Mile Run section depicts the array of terraces and other Quaternary deposits that flank Four Mile Run, as well as the sizable body of estuarine sediment at its mouth, most of which is now buried beneath artificial fill. The section also illustrates some of the internal architecture of the northern end of the Old Town terrace, including the impressive buried escarpment below Lynhaven (site GT-117), which appears to separate older and more deeply entrenched terrace sediments to the east from thinner and presumably younger terrace deposits to the west. The two prominent organic horizons reported in the borings at site GT-117 are suggestive of major periods of non deposition and weathering(?), accompanied by long-term growth of vegetation. The deep channel below this site may be the same as or connect with the deep channel seen much further to the south below Old Town, although a direct connection cannot be established from existing data. The substantial thickness of the Cameron Valley sand member (Kpcs - Kpcv) at the base of the Potomac Formation in this section is likely related to its location near the thalweg of the Four Mile Run bedrock valley (see Plate 3 and its expanded explanation).